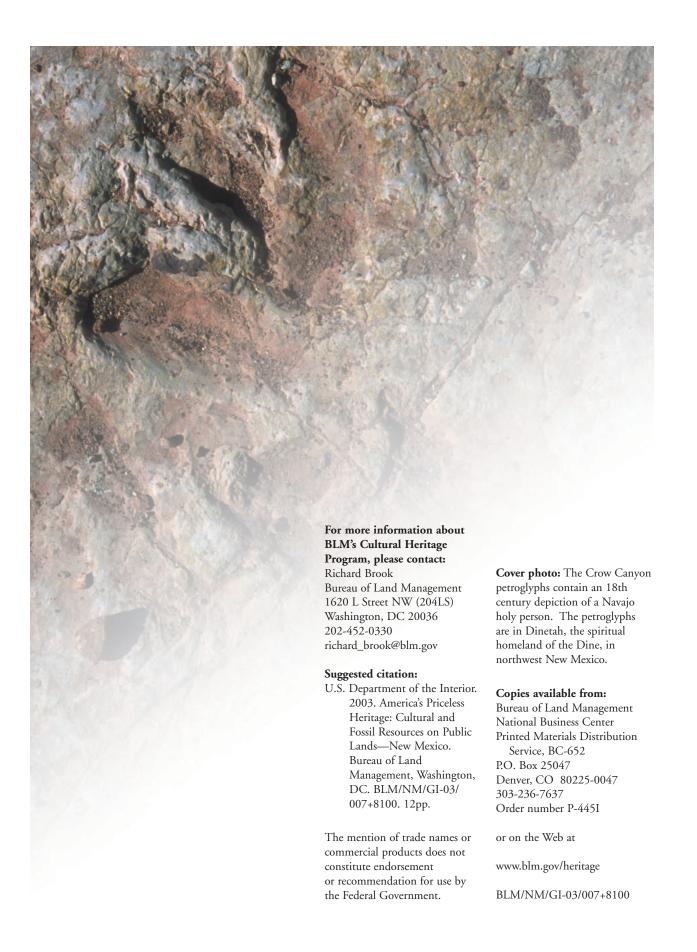


# America's Priceless Heritage:

Cultural and Fossil Resources on Public Lands



U.S. Department of the Interior Bureau of Land Management November 2003



# Preface:

#### An Invitation to the Reader

The Bureau of Land Management (BLM) is responsible for managing 261 million acres of public land—about one-eighth of the United States. Most of these lands are in the Western United States, including Alaska, and they include extensive grasslands, forests, high mountains, arctic tundra, and deserts. BLM also manages about 700 million acres of subsurface mineral resources, as well as numerous other resources, such as timber, forage, wild horse and burro populations, fish and wildlife habitat, wilderness areas, and archaeological, historical, and paleontological sites.

BLM administers the public lands within the framework of numerous laws, the most comprehensive of which is the Federal Land Policy and Management Act of 1976 (FLPMA). FLPMA directs BLM to follow the principle of "multiple use," which means managing the public lands and their various resource values "so that they are utilized in the combination that will best meet the present and future needs of the American people." This multiple use mission requires BLM to address quality of life issues, including providing clean air and water; providing recreational opportunities; protecting wildlife; and safeguarding cultural and fossil resources; as well as providing for a sound economy through the production of energy, food, and fiber and by sustaining local communities and their heritage.

Given the scope of its multiple use mission, BLM affects more Americans on a daily basis than any other land management agency. The Bureau constantly faces the challenge of ensuring a balance of land uses among perspectives that are occasionally, if not often, competing. BLM recognizes that people who live near the public lands have the most direct connection and knowledge of them, as well as a commitment to their stewardship. At the same time, the Bureau maintains a national focus because these lands belong to all Americans, whose appreciation of them continues to increase.

BLM's central challenge is to balance the demands of growth and the imperative for conservation. America is entering into a new era of conservation to achieve a healthier environment and a more secure economy—what Secretary of the Interior Gale Norton





calls the "new environmentalism." Secretary Norton sums this new environmentalism up in a visionary approach she calls the "four Cs"—using communication, cooperation, and consultation, all in the service of conservation. At the heart of the four Cs is the Secretary's belief that for conservation to be successful, BLM must involve the people who live on, work on, and love the land.

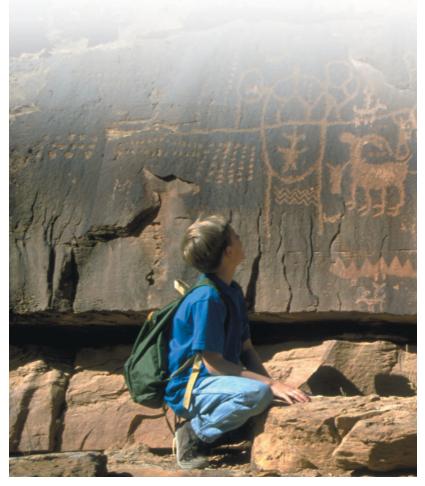
The Bureau's ability to partner with public land users; local residents; nonprofit groups; universities; "friends of" organizations; and State, local, and tribal governments fosters a wide and diverse support network. This network is essential not only because the agency has limited staff and budget resources, but because there is a wide variety of stakeholders who are concerned about public land management. The Bureau has been working cooperatively with partners and volunteers for decades and that work has yielded outstanding results towards attaining common goals and values.

Secretary Norton's approach to conservation is especially relevant to the management of cultural and fossil resources on public lands. These resources are a constant source of fascination for visitors. People look to these resources for recreational opportunities...for fulfilling their curiosity about the recent and remote past...for contemplating their origins...for preserving and continuing their cultures...for finding peace and quiet. The Secretary's approach to managing these resources was furthered on March 3, 2003, when President Bush signed a new Executive Order, which directs Federal agencies to advance the protection, enhancement, and contemporary use of historic properties, particularly by seeking public-private partnerships to promote the use of such properties as a stimulus to local economic development. The Executive Order is an important component in a new White House initiative called Preserve America, which was announced on March 3, 2003 by First Lady Laura Bush. The *Preserve America* program will serve as a focal point for the support of the preservation, use, and enjoyment of America's historic places.

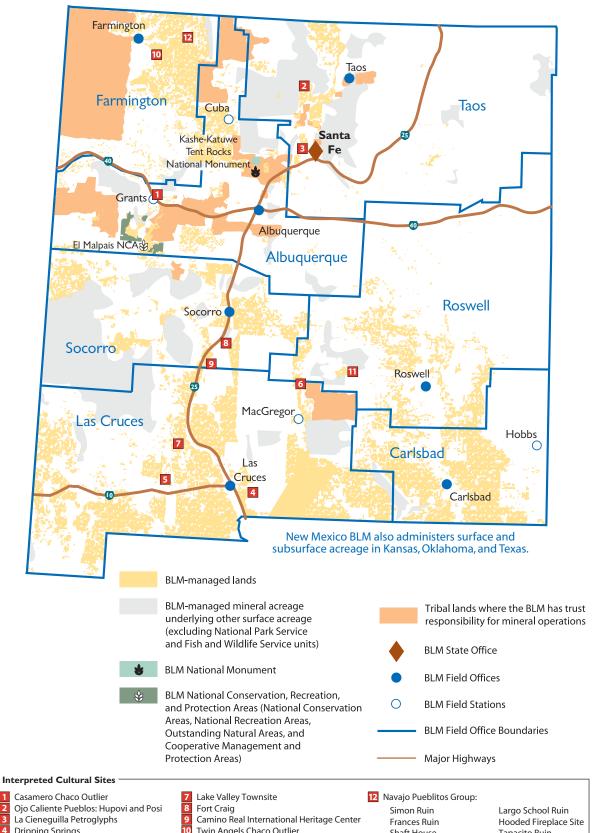
The Bureau is proud of its mission and understands why it is crucial to the Nation's future. The Bureau's vision is to live up to this ambitious mission and thereby meet the needs of the lands and our people. In order to achieve this goal, the Bureau must seek new ways of managing that include innovative partnerships and, especially, a community-based focus that

involves citizen stakeholders and governmental partners who care about the public lands and the cultural and fossil resources found on them. This document is an invitation to you—the public BLM serves—to continue your ongoing dialogue with us about the health and future of the Nation's cultural and natural legacy. Tell us what is important to you, what you care most about, what you want saved, and how BLM can work collaboratively to preserve our priceless legacy.

This document is an invitation to you...to continue your ongoing dialogue with us about the health and future of the Nation's cultural and natural legacy.







La Cieneguilla Petroglyphs

Dripping Springs Fort Cummings

Three Rivers Petroglyph Site

Twin Angels Chaco Outlier

Rio Bonito National Petroglyph Trail

Shaft House Crow Canyon Site Crow Canyon Petroglyphs Tapacito Ruin Split Rock Ruin



# NEW MEXICO

## Statistical Overview

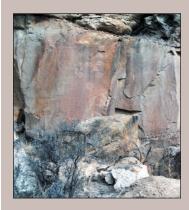
Acres of public land	13.4 million acres
Acres inventoried for cultural properties (FY 2002)	40,891 acres
Acres inventoried for cultural resources (to date)	1,304,648 acres
Cultural properties recorded (FY 2002)	1,159 properties
Cultural properties recorded (to date)	32,392 properties
Cultural Resource Use Permits in effect (FY 2002)	96 permits
National Register of Historic Places listings (to date)	27 listings
National Register of Historic Places contributing proper	erties 127 properties
Section 106 class III undertakings (FY 2002)	2,524 undertakings
Section 106 data recovery, projects (FY 2002)	14 projects
Section 106 data recovery, properties (FY 2002)	86 properties
Interpreted places	12 places

### Cultural Resources

#### 1. Program Summary

The history of American archaeology is inexorably linked to New Mexico, from the discovery and verification of Paleo-Indian sites at Clovis and Folsom to landmark studies on archaeological chronology and stratigraphy. Because of its numerous prehistoric populations and the high visibility of sites in the desert, New Mexico yields the densest concentration of archaeological sites in the United States. On average, one site is found on every 40 acres

The history of American archaeology is inexorably linked to New Mexico...



Pictograph of a 17th- to 18th-century Navajo Ye'ii in Jesus Canyon, east of Farmington.

resource
management
program in
New Mexico is
well-balanced
between
project-oriented
compliance work
and proactive
outreach and
education
initiatives.



This one-room log schoolhouse dates to the 1920s when several small farming and ranching communities were established in El Malpais National Conservation Area. of BLM public lands in New Mexico, with approximately 1,000 new sites recorded yearly.

BLM's cultural resource management program in New Mexico is well-balanced between project-oriented compliance work and proactive outreach and education initiatives. New Mexico often authorizes 2,500 to 3,000 Federal projects each year—more than any other State. This is due to the presence of coal, oil and gas, potash, helium, uranium, and copper reserves in New Mexico, Oklahoma, Kansas, and Texas. At the same time, New Mexico has aggressively pursued the use of assistance agreements and challenge cost share agreements to leverage funding for proactive program developments, which include creating traveling exhibits; expanding partnership and training opportunities with Mexico's National Institute of Anthropology and History; working with the State Monuments Division to plan, staff, and operate the Camino Real International Heritage Center; and helping develop new Project Archaeology lesson plans, bilingual materials, and courses. In addition, BLM New Mexico has adopted a strategy of packaging and promoting groups of like sites, such as historic military forts, El Camino Real de Tierra Adentro, historic mining towns, rock art sites, Chacoan outliers, Navajo pueblitos, historic homesteads, Chama Valley protohistoric pueblos, and Galisteo Basin pueblos south of Santa Fe.

#### 2. State Cultural History

New Mexico's cultural history is rich, deep, and well-preserved. Two of the most famous Paleo-Indian sites, the Folsom and Clovis sites, are found here. Paleo-Indian cultures—often recognized by their elaborate stone blades—existed from about 10000 to 5500 B.C., and artifacts from these mammoth and bison hunters have been found in eastern as well as central and western New Mexico.

During the subsequent Archaic period (5500 B.C. to A.D. 1), hunters and gatherers adapted to changing environmental conditions and the extinction of the large mammals of the earlier era. The adoption of agriculture occurred at different rates throughout the Southwest and happened quite rapidly during the middle Archaic at certain locations. Archaic tool kits included smaller projectile points, atlatls, manos, metates, pestles, mortars, and nets and traps. These sites are found in caves, rock shelters, canyon bottoms, springs, canyon heads, and sand dunes in close proximity to a variety of plant resources.

Archaeologists divide the time after A.D. 1 into several periods, marking the development of regional agricultural societies:

A.D. 1-900 Ancestral Pueblo (Basketmaker II to Pueblo I) Anasazi and Mogollon appear, with distinctive architectural, ceramic, food processing technologies; bow and arrow and large, pit-house villages appear.

A.D. 900-1150

Chaco Canyon, center of a dozen Great Houses and large regional network of outlier settlements connected by roads; small pueblos surround outlier communities, about 100 known in the Four Corners area.

Pueblo III A.D. 1150-1300

Eclipse of Chaco Canyon and rise of Mesa Verde with large sites at Zuni, El Malpais, along the Rio Grande; pueblos are huge—over 100 rooms each, apparently defensive sites. Drought-forced abandonment of Four Corners region at the end of 1200, with movement into Rio Grande and northcentral New Mexico, and the establishment of many of today's Pueblo communities.

A.D. 1300-1540 Pueblo IV

New pueblos along the Rio Grande and tributaries; large population centers and sophisticated agriculture. Pattern of rapid construction of large settlements, short-lived occupations, and rapid abandonment.

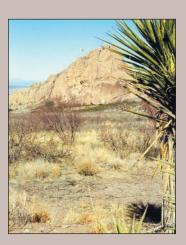
The world-famous Mimbres pottery comes from the Mogollon Pueblo period, from villages in the Mimbres Valley. This pottery features designs of people, animals, mythical creatures, and scenes from daily life. Village locations shifted about A.D. 1350 to the fringes of the traditional Mimbres culture area, and the entire region was largely abandoned after that time.

The history of the Navajo and Apache of New Mexico is different than that of the Pueblo people. These Athapascan-speaking people entered New Mexico in the early 1400s, settling in the northwest part of the State. After the Indian wars of the 19th century, they were deported to resettlement camps and permitted to return to their homelands only after many had died. The Spanish Entrada and Early Spanish Colonial Period lasted from A.D. 1540–1700. Juan de Onate established the first Spanish settlement in 1598 at San Juan Pueblo. The route he established became known as El Camino Real and, for over 300 years, it served as an economic lifeline for the community. Spanish settlements grew along the Camino Real, and cities such as Albuquerque and Santa Fe trace their histories to this trail.

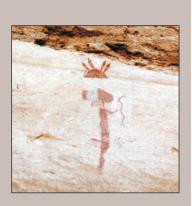
#### 3. Cultural Resources At Risk

Vandalism, weather and erosion, development, recreational use and other activities all are taking a toll on BLM's cultural

The world famous Mimbres pottery comes from the Mogollon Pueblo period, from villages in the Mimbres Valley.



La Cueva rock shelter is an archeological site associated with the Jornada branch of prehistoric Mogollon culture.





Damage done to rock art in New Mexico.

...Chacoan
outliers and
Navajo pueblitos
are losing
masonry fabric
due to weather
and erosion...

resources in New Mexico. For example, Chacoan outliers and Navajo pueblitos are losing masonry fabric due to weather and erosion, and erosion along the La Plata River is undercutting and washing away sites; vandalism is affecting Rio Grande style rock art sites in the La Cienega and La Cieneguilla areas southwest of Santa Fe; looting threatens large adobe pueblos in the Galisteo Basin as the population expands in that area; off-road vehicle use is eroding sites in southwestern New Mexico that have never been fully documented; recreationists collect artifacts at the surface at archaeological sites, removing diagnostic pieces; and unauthorized road construction associated with saltcedar eradication is adversely affecting pithouse villages along the Pecos River.

#### 4. Major Accomplishments

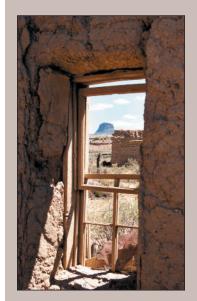
- Implemented a BLM pilot Site Stewardship program in northwest New Mexico that, because of its success, will be established statewide by the New Mexico State Historic Preservation Office.
- Sponsored eight international conferences on the Camino Real and produced publications and interpretive products in partnership with Mexico.
- Incorporated data synthesis and heritage education into the protocol agreement with the State Historic Preservation Office, resulting in the production of regional overviews, geomorphological studies, research designs, lesson plans, newsletters, and standards and benchmarks publications for Project Archaeology.
- Held numerous field schools cosponsored by BLM
  New Mexico and New Mexico State University,
  University of Texas, University of New Mexico, Eastern
  New Mexico University, and San Juan College on
  threatened BLM sites.
- Released 14 volumes of the New Mexico cultural resources series of historical essays, research, and interpretive reports to libraries, schools, and universities and to be sold in Public Lands Information Centers.
- Completed major Historic American Buildings Survey recordation for 22 Navajo pueblitos and 4 Chacoan outliers and stabilized 25 pueblitos and 7 outliers.

- Completed major exhibits on the Mimbres and Navajo pueblitos, which will travel throughout the Western United States, Spain, and Mexico, in partnership with the Museum of Indian Arts and Culture.
- Planned, built, and staffed the multimillion-dollar Camino Real International Heritage Center in partnership with the State Monuments Division.
- Developed innovative interpretive products through a partnership with Santa Fe Indian School, including interactive computer programs, CD-ROMs, lesson plans, and a guide to multimedia instruction.

#### 5. Ethnic, Tribal, and Other Groups to Whom BLM Cultural Resources Are Important

Almost without exception, the management of cultural resources is of vital interest to some traditional community in New Mexico. Whether the BLM is preserving ancestral Tewa pueblo ruins that are tied to current pueblos of San Juan or San Ildefonso, interpreting the influence that the Camino Real had on the customs and animal husbandry of rural towns in the Rio Abajo, or stabilizing dramatic defensive Navajo refuge sites, traditional communities feel that they have a stake in the outcome. Cultural resources management in New Mexico, thus, must constantly balance the need to preserve and protect resources of national and international significance with the interests, beliefs, and political agendas of traditional communities with deep ties to the land.

The management of heritage resources is of vital interest to numerous Indian tribes within New Mexico. BLM consults with Apache Tribes at Jicarilla and Mescalero and the Rio Grande Pueblos (Cochiti, Isleta, Jemez, Nambe, Picuris, Pojoaque, San Felipe, San Juan, Santas Ana, Santa Clara, Santo Domingo, Tesuque, Taos, and Zia) and other Pueblo Tribes, including the Acoma, Hopi, and Zuni. The Navajo Nation maintains a strong Historic Preservation Division and is very active in consultation. These Native Americans consider many landscapes and cultural resources managed by BLM in New Mexico to be ancestral, sacred, and vital to ongoing ceremonies and rituals. Shrines, sacred salt lakes, mountain peaks, and lava flows represent means to communicate with spirits and perform renewal ceremonies; they are locations where the gods currently reside or they may preserve epic battles and struggles of deity. Such places are held in the



An old adobe ruin gives a picturesque view of Cabezon Peak Wilderness Study Area in the town of Guadalupe.

Almost without exception, the management of cultural resources is of vital interest to some traditional community in New Mexico.

communities
are proud of
and fascinated
by evidence of
early industrial
history
preserved on
the public lands.



Thieves attempted to remove the pictograph of the Navajo Ve'ii

utmost reverence and their preservation is considered essential to the maintenance of harmony and positive relations with the spirit world.

BLM New Mexico is also responsible for public lands and minerals in Texas, Kansas, and Oklahoma. At times, BLM consults with some of the Plains Tribes and Apache Tribes regarding Native American Graves Protection and Repatriation Act and National Historic Preservation Act issues. The Oklahoma offices have over 100 tribes with whom they consult regarding land and mineral management issues.

Hispanic communities within New Mexico were established as early as the late 1500s along the Camino Real. These communities today take a great deal of pride in being able to trace family histories back 20 generations, and they are keen to learn more about the Camino Real, Spanish colonial encampments, and early colonial settlements. In addition, some of the earliest oil and gas and potash developments in the United States occurred in southeast New Mexico, and local communities are proud of and fascinated by evidence of early industrial history preserved on the public lands.

#### 6. Existing Partnerships

- The Archaeological Records Management Section and New Mexico Museum of Natural History to automate archaeological and paleontological data for use in planning, modeling, and research.
- The Four Corners Heritage Council for the Heritage Tourism Conference and traveling Navajo Pueblitos exhibit.
- The State Historic Preservation Office for Project Archaeology, including production of newsletters, development of advanced teacher-training seminars, research, and training in geomorphology.
- The New Mexico Office of Cultural Affairs to develop fresh traveling exhibits and other interpretive products.
- The University of Texas for a field school to determine the research potential of a badly looted Classic Mimbres village site.
- Mexico's National Institute of Anthropology and History, through a joint declaration, to develop cooperative

programs to better protect, manage, and interpret cultural resources in northern Mexico and the southwestern United States.

The University of Texas, El Paso, to develop a bilingual Web page on the Camino Real de Tierra Adentro National Historic Trail.

#### 7. Economic Benefits

According to the New Mexico Office of Cultural Affairs report "On Fertile Ground: Assessing and Cultivating New Mexico's Cultural Resources" (1995):

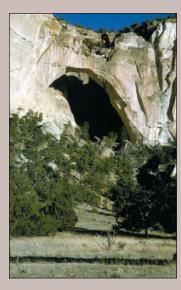
- In 1995, 13 National Parks and Monuments and 5 State Monuments emphasizing historic and prehistoric sites in New Mexico generated \$1,352,225.
- In 1994, international visitors to New Mexico spent \$104,000,000.
- Of the overseas visitors to New Mexico, 71 percent participated in visits to historic sites and 54 percent in visits to American Indian sites.
- Direct dollars flowing into the New Mexico economy directly from cultural resources exceed \$300,000,000 annually.
- Direct and indirect expenditures related to cultural resources in New Mexico are \$1.6 billion annually.
- Over 21,000 jobs can be attributed to cultural resources.
- More New Mexicans are employed in cultural resources and cultural tourism than in manufacturing, construction, or eating and drinking establishments.
- Local and State government tax revenues related to cultural tourism total \$35 million and \$74 million, respectively.

# Paleontological Resources

#### 1. Program Summary

BLM administers over 13 million surface acres, comprising about 17 percent of the total surface area of New Mexico. An

Direct and indirect expenditures related to cultural resources in New Mexico are \$1.6 billion annually.



La Ventana Arch in the El Malpais National **Conservation Area in Grants** was eroded from sandstone deposited during the age of the dinosaurs.





One of many bones found in the Peterson Jurassic period dinosaur quarry west of Albuquerque.

of dinosaurs
have been
discovered and
named within the
past 3 years.

estimated 1.5 million acres contain fossils exposed at the surface. Approximately nine Paleontological Resource Use Permits are active at this time. Researchers from the University of Nebraska, State Museum of Pennsylvania, Mesa Southwest Museum, New Mexico State University, and New Mexico Museum of Natural History and Science work year-round in the State. Five new types of dinosaurs have been discovered and named within the past 3 years. These and other discoveries have received national attention. New Mexico has 12 special management areas that focus on the protection of paleontological resources, one of which is a Research Natural Area.

#### 2. State Paleontological History

New Mexico's fossil record includes almost all of the geologic periods from the Cambrian (over 500 million years ago) to the recent (the last 10,000 years) and nearly every imaginable ancient environment. Many fossil deposits are of national and international importance, and close to 1,000 different kinds of fossils were made known to the scientific world from specimens first found in New Mexico rocks.

Late Cretaceous and early Tertiary sediments in the San Juan Basin produce an abundant and diverse fossil vertebrate assemblage. The basin is one of only a few places in the world where continental sediments containing Late Cretaceous dinosaurs are immediately overlain by rocks bearing some of the earliest Tertiary mammals. The temporal interval represented in these sediments is of great importance to the scientific community because of its bearing on the question of the extinction of dinosaurs and other species at the end of the Mesozoic era and the almost explosive rise of primitive mammals at the beginning of the Cenozoic era.

Formations of early Tertiary age (58–63 million years ago) contain fossils for two North American land mammal ages, the "Puercan" and "Torrejonian" of the early and middle Paleocene. The younger San Jose Formation (55 million years ago) also contains important vertebrate fossils. It has yielded two classic North American early Eocene vertebrate faunas and still produces important fossil vertebrate specimens including those of primitive primates. The majority of knowledge about the nature and structure of the first Tertiary mammals has been based on the study of specimens from these formations.

Older Mesozoic and Paleozoic rocks exposed farther south record the evolution of dinosaur groups from reptiles and amphibiandominated communities to diverse dinosaur communities. The Permian Abo Formation in southern New Mexico has yielded a world-class trackway that dwarfs all other known sites in quantity, quality, and diversity of ichnotaxa (animal forms identified from tracks), and undoubtedly represents the most important Early Permian tracksites known to date. The trackway preserves a unique record of the lives and behavior of reptiles, amphibians, insects, and other invertebrates that lived 280 million years ago.

Triassic-age rocks in central New Mexico have produced the most complete record of theropod evolution in the world. Trackway sites are also recorded in the floodplain deposits of this rock unit. These rocks appear in large areas of BLM-administered land in west-central New Mexico.

The Jurassic-age rocks (about 140 million years ago) have yielded scientifically significant dinosaur remains from a number of sites near Albuquerque. One site has produced bones representing a new genus and species of dinosaur named *Seismosaurus* that achieved worldwide fame at the "Gigantic Dinosaurs Expo 2002" in Japan. Another locality, the "Peterson Quarry," is New Mexico's strongest candidate to yield a large and important sample of Jurassic-age dinosaurs.

Geologically young formations, including Miocene, Pliocene, and some Pleistocene deposits, lie along the Rio Grande drainage. They contain fossils of mammoths, mastodons, bison, horses, camels, bears, dogs, saber-toothed cats, and giant armadillo-like animals called glyptodonts, some of which are exhibited in the New Mexico Museum of Natural History and Science in Albuquerque.

#### 3. Paleontological Resources at Risk

Fossils can potentially be disturbed or destroyed due to diverse types of land use, increasing populations, and their financial value. Because of their visibility and accessibility and unauthorized collecting and vandalism, a monitoring program is needed to protect areas with fossils. Excavation and collection by unauthorized personnel has, in the past, caused long-term adverse impacts to scientific research and protection of these resources. Collection of fossils without chronological control has minimal value when their contextual matrix ranges over thousands or even millions of years. Sites which are at risk from these factors include:

 The Peterson site, which is New Mexico's first Morrison Formation dinosaur bone bed, containing multiple fossils of several different individuals. Collection of fossils without chronological control has minimal value when their contextual matrix ranges over thousands or even millions of years.



The "Bisti Beast" is possibly a new genus of the tyrannosaur family, closely related to *Albertosaurus*.

The benefits to public education, scientific knowledge, and public awareness and good will for BLM are invaluable.

- The Paleozoic trackways in the Robledo Mountains north and west of Las Cruces.
- The Bisti/De-na-zin wilderness area, which contains scientifically important geologic structures and associated paleontologic values.

#### 4. Major Accomplishments

- Located 130 new fossil sites.
- Cataloged over 35,800 specimens.
- Published over 60 abstracts.
- Published over 120 articles in professional scientific journals.

#### 5. Existing Partnerships

- The New Mexico Museum of Natural History and Science for curation of fossils collected from public lands in New Mexico and for data management.
- The State Museum of Pennsylvania for joint research and publication of paleontological data.
- The Friends of Paleontology for logistical support of field work and collection at specific sites.

#### 6. Economic Benefits

Since the New Mexico Museum of Natural History and Science opened in 1986, more than 5 million visitors from New Mexico, the U.S., and foreign countries have come to see fossil exhibits, many of which feature specimens from BLM lands. According to a recent statewide survey, almost half the State residents have visited the museum. About 100 people visit the museum (on average) every hour that it is open. Almost 120,000 school children attended an educational presentation at the museum in 2002. The economic effects of such visitation on the economy of Old Town and Albuquerque are thus not insubstantial. The benefits to public education, scientific knowledge, and public awareness and good will for BLM are invaluable.

